Small Business Innovation Research/Small Business Tech Transfer

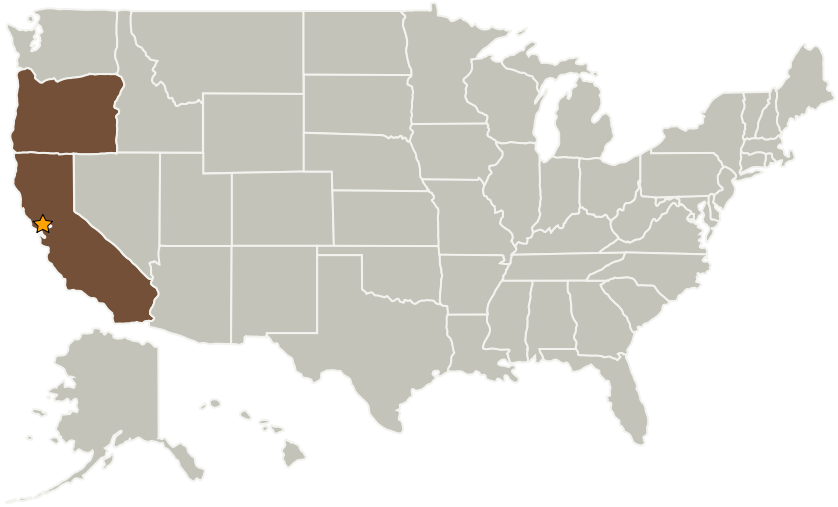
Microwave Enhanced Freeze Drying of Solid Waste, Phase II

Completed Technology Project (2004 - 2006)

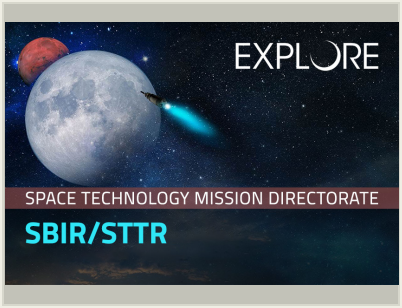
Project Introduction

The development of advanced methods for Microwave Enhanced Freeze Drying of Solid Waste (MEFDSW) is proposed. Methods for the recovery of relatively pure water as a byproduct of freeze drying will also be fully developed. The Phase II project will result in the design, assembly, thorough testing, and delivery of a technology demonstrator prototype which may be employed over a broad range of mission scenarios. The prototype system will recover water initially contained within the wastes and stabilize the residue with respect to microbial growth. The dry waste may then be safely stored or passed on to the next solid waste treatment process. Using microwave power in a closed microwave cavity, water-ice present in the frozen solid waste can be selectively and rapidly heated. This results in a more energy efficient lyophilization process, and therefore hardware based upon this technology will have a lower Equivalent System Mass (ESM) than currently available systems.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
UMPQUA Research Company	Supporting Organization	Industry	Myrtle Creek, Oregon



Microwave Enhanced Freeze Drying of Solid Waste, Phase II

Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Microwave Enhanced Freeze Drying of Solid Waste, Phase II

Completed Technology Project (2004 - 2006)

Primary U.S. Work Locations	
California	Oregon

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX07 Exploration Destination Systems
  - TX07.2 Mission Infrastructure, Sustainability, and Supportability
    - TX07.2.1 Logistics Management